

Maui County in 1981

A Report by the Research Division

December, 1981

After a decade of breathtaking growth, the Maui County economy is sliding further into an unaccustomed decline in 1981. The weakness began to set in last year with a 3 percent dip in the number of visitor arrivals. Although the slump in tourism has persisted into this year, Maui has not suffered as badly as the other Neighbor Island counties. The two consecutive years of decline in tourism have been severe enough, however, to deflate the overall economy, which has come to depend so much on the health of its leading industry. The number of visitors to the county in the first nine months of this year totaled 1,025,400, down 3 percent from the 1,059,000 reported for the same period in 1980. Most of the adversely-affected hotel operators see no relief for the rest of the year, and many see no encouraging sign for 1982. (However, there is one resort that stands out as an oasis of strength within the industry—the Kaanapali Beach Resort.) But hotel operators foresee a rebound in 1983 and plan to build a base this year and next in preparation for what they anticipate will be slower but sustained growth beginning in 1983.

Although visitor arrivals to Maui County dipped last year for the first time since figures were first recorded 20 years ago, the general economy held up rather well with the 1980 rate of unemployment the lowest in ten years. This year employment as well as the job count are down, the number of jobless is up, and the rate of unemployment has jumped a full point to 6.2 percent. State tax collections in the county for the first nine months were up only 5.8 percent, compared with 10.9 percent for the same period in 1980, and an average 15.1 percent gain for the four years from 1976 to 1979.

The year 1980 was a tremendous year for construction on Maui. The value of private projects authorized and public contracts awarded in 1980 totaled \$271.6 million which was 48.2 percent over the 1979 total of \$183.2 million. Contributing all of the gain was residential construction, where the value doubled from \$107.9 million to \$215.2 million. Single-family construction was down as in every other county, but the number of condominium apartment projects was ahead 65 percent last year. Nonresidential projects, that is commercial and industrial construction, ended 1980 with the same dollar volume as the year before, and public contracts awarded declined more than 50 percent to \$17.9 million.

In 1981 construction is fading badly under the weight of the downturn in tourism and high interest rates. The dollar volume of private permits and government contracts in the first nine months fell 34 percent below the comparable 1980 period. The dollar volume was off about a third in each of the major sectors.

Also restraining construction on Maui has been the shortage of water. A moratorium on subdivisions still exists in upcountry Kula. For Central Maui, construction is limited annually to a level of development that will require an increase in the water supply of no more than a million gallons of water per day. For West Maui the limit is an additional 768,000 gallons of water per day. And there is a special assessment on each project depending on the amount of water required for it. The County Planning Department notes that there was a continuous stream of

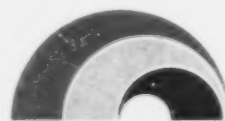
construction 18 months ago, with some contractors getting started on new projects while others were finishing up and the rest were in the midst of building their structures. There is no steady flow of work now.

Stanley Gima, partner and head of Architects Hawaii's Maui office, said future construction plans declined this year but he senses an increase in 1982. He cites planning for several sizable condominium projects and other types of structures. Hawaiiana Investment Co., a subsidiary of C. Brewer & Co., has started work on its 270-lot subdivision in Wailuku Heights, of which more than 180 have been sold. The lots will be ready toward midyear 1982 when owners can start building their homes. Then the second section of 130 lots will be developed, subject to conditions at that time. Alexander & Baldwin has received bids for the construction of its Maui Industrial Park III. There will be 24 lots in the 32-acre tract adjoining Wakea Street. A&B has also negotiated leases with Safeway and Pay 'n Save which will occupy a new building that A&B will build across Kaahumanu Avenue from the Maui Mall. Each will occupy floor space of 40,000 square feet. A&B has another 121,000-square-foot parcel adjoining the property, and has been discussing leases with prospective tenants. At Kaahumanu Center, next to Liberty House, construction of a new office building is nearing completion. City Bank will be the anchor tenant.

Although public works projects have been few and far between the past two years, Maui County is preparing to end that construction drought. Council Chairman Robert Nakasone said the Council is planning to float a bond issue of \$18 million to \$20 million for capital improvements. Mayor Hannibal Tavares has requested a new police station, a new fire station for Central Maui, road improvements, and sewer and water transmission lines. The Mayor has made housing a major priority. "We don't talk about low-cost or affordable housing anymore," he says, "but housing of the lowest possible cost." He wants to get all the land he can get hold of properly zoned and get regulatory procedures completed within a year when he hopes interest rates will have come down so there can be a big push for housing for Maui residents. For example, A&B has agreed to give the County 47 acres in Paia of which five acres are in cane. He wants to get the land classification changed and then get zoning so that the parcel will be ready for development when the time comes. A&B is also donating 12 acres in Wailuku, Maui Land & Pineapple Co. is giving 15 acres, and Amfac is planning to donate land to the County for housing also.

TOURISM

Maui County is feeling the effect of the leveling off in tourism this year and last. But it is holding out much better than either Hawaii or Kauai counties, which are into their third consecutive years of decline. Maui's drop in visitor arrivals is not as steep as that taking place in the other two Neighbor Island counties. The number of visitors to Maui County peaked in 1979 with 1,420,000 arrivals, and dropped 3 percent in 1980 to



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1,378,000. For the first nine months of this year, total arrivals were 1,025,400, down 3 percent from the same period in 1980. Despite the decrease in arrivals last year, spending by visitors increased appreciably in the county. The Hawaii Visitors Bureau estimates that visitor expenditures in 1980 were \$383.8 million, 12.6 percent more than the \$340.9 million spent in Maui County by visitors in 1979. This was almost two and a half times the revenues of the sugar industry on Maui, even with sugar having had a great year in 1980.

Average occupancy for Maui County hotels continues to decline this year. For the first nine months of the year average occupancy was 61.8 percent, down from 68.6 percent for the same period in 1980. The reason for this drop is not only a smaller number of visitors but an increase in the number of hotel rooms. At the June inventory, the county had 11,245 rooms, an increase from 10,483 a year earlier. With the Marriott Hotel opening, 720 more rooms will be added to the inventory this year. Helping to alleviate the decline slightly is the continuing gain in the length of stay. For the first nine months of this year, the average visitor spent 4.15 days in Maui County, compared with 4.08 days in the previous year.

Relatively unaffected in this down year is Amfac's Kaanapali Beach Resort. Average occupancy of the five hotels in this resort community for the first six months of the year was 83 percent, about the same as in the first half of 1980. The Hyatt Regency Maui, which opened in April last year, has been running at a 95 percent rate this year, which has raised the occupancy rate for the resort as a whole. The Kaanapali Beach Operators Association has continued to promote the resort heavily in 1981 with help from United Airlines. The resort has had good exposure in the national media, especially television. The annual Maui Pro Tennis Classic held at Kaanapali is televised and this also attracts visitors. The Women's Kemper Open Golf Tournament will be at Kaanapali in March 1982, and again in March 1983. Both will be televised nationally.

Amfac is sprucing up the resort this year with new signs and landscaping. The Hawaiian Sea Village, originally planned for the North Beach area, will be situated instead next to the Hyatt. Architects are working on its design, and groundbreaking is scheduled for 1983. Amfac has sold 6.5 acres of land next to the Royal Lahaina Hotel to Charles Pankow Associates, which is planning a condominium apartment.

The newest hotel at Kaanapali is the Marriott Hotel, which will be opening on December 16, with more formal opening ceremonies to be held after the first of the year. The 720-room hotel has two nine-story wings with rooms that open to an atrium on the inside and to ocean views on the outside. The architecture and decor is Hawaiian and the landscaping features a coconut grove.

Marriott is a meetings-oriented hotel chain, and the Maui Marriott will be no different. The ballroom, with a 16-foot ceiling, will have 14,040 square feet of floor space which Bruce Curtis, general manager, says is the largest on the Neighbor Islands. It can seat 1,300 for banquets, 1,700 theatre-style, or 1,900 for receptions. The ballroom can be divided into ten meeting rooms of different sizes. Meetings have already been scheduled for next year, some of them on referral from Marriott hotels on the Mainland. The hotel will have a staff of 800 to 900 when in full operation, and 80 experienced workers from other Marriott hotels will work with the local staff for three weeks at the beginning, a Marriott feature when opening a new hotel. This will be Marriott's 100th hotel in 25 years of business, and its first in the 50th state. The hotel was built by the Kaanapali Beach Partners, with financing by Metropolitan Life Insurance Co. Marriott has the management contract.

The Hyatt Regency Maui is the star performer at Kaanapali. The occupancy for this 820-room hotel has been running in the 90 percent range all year. Two months after its opening last year, the hotel hosted 2,000 travel agents, and beginning last fall

travel writers from Europe have been invited. These programs have been paying off since, said Gordon Hentschel, general manager. An international market has developed for the hotel. Advertisements in Latin America brought travelers from Brazil, Argentina, and Mexico, and traffic from the East Coast and the Far East has been good—the reason why the Hyatt has not been affected by the decline in tourism. Hyatt has also done well with the incentive and insurance markets this year. It's had 36 major insurance meetings, from Prudential to State Farm and the Million Dollar Round Table. It has also hosted some deluxe incentive tours, such as for the auto industry and oil companies. The business for the next year looks very strong with a high demand for deluxe accommodations, so the floor with the special service of a concierge will be expanded to two floors, and eventually the whole tower may be converted. The hotel is expecting the group business and individual guests to be equally divided next year.

The Wailea resort is having its problems in the current decline in tourism. As a newer resort, its identity is not as well established as other parts of Maui. To remedy this, the Wailea Destination Association has been organized to promote the resort. Since its founding on July 1, the association has mounted an intensive media advertising campaign directed specifically at travel agents and has conducted 28 agents' seminars in as many cities. A program of consumer advertising will begin early in 1982.

Although October was a particularly strong month, the two hotels at Wailea have not done well this year. Earlier this year, plans to develop a third hotel at Wailea were dropped when a joint venture of Hilton Hotels and Ewen Pope of Atlanta was unable to put together a financing program. Another developer presently is considering the site. Vikor/Hawaii Ltd., which manages the 130 condominium units in the Wailea rental pool, reported that it had a strong summer and a good fall, but that advance bookings for winter are just average. It has started to attract small tour groups such as golf getaway packages which have helped occupancy.

Wailea Development Co. has agreement-of-sale packages for single-family lots and condominium units at 12 percent interest, but the market has been soft, reports Gary Gifford, general manager-Maui. It had ten condo units and ten lots available at the end of September. Two single-family subdivisions are now being developed, one a 59-lot golf course project, and the other a 35-lot subdivision north of Kilohana Drive. Both will be marketed early next year. Alanui Associates, which purchased the 88-unit Alanui project from Wailea Development, had sold 40 of them by September and is working on financing for construction. Wailea Development is in the early planning stages for two homesite projects totaling 211 lots, a fairway homesites project and a 50- to 60-lot golf course subdivision extension.

At the adjoining Makena resort, Seibu opened its championship golf course August 6 along with the new clubhouse. Already it is planning a second 18-hole course which Robert Trent Jones will also design. Joji Hagiva, ranking Seibu executive on Maui, hopes work can start within a year. Seibu has the building permit for a 300-room hotel, but the start of construction is awaiting a County decision on whether to build the road along the existing route or use the new alignment called for in the General Plan. The 14-inch water line from the Wailea clubhouse to the Makena resort will be laid along the new road but work cannot start until the route is determined. Hagiva said Seibu's Prince Hotel chain recently purchased a ski resort at Alyeska, Alaska, and may promote a Japan-Alaska-Hawaii tour.

The Maui Lu, a medium-sized hotel in Kihei, is among those that have slipped in the present market. The owners commissioned Pannell, Kerr & Forster to do a study on the highest and best use of the property. The recommendation was to tear down

the present structures and build a 350-unit, world-class luxury hotel on the 30-acre property because the big demand today is for this type of service, said Robert Hoffman, president. Management is studying the report plus other options to restore reasonable profitability to the property.

Being the newest of Maui's three major resorts now in operation, the Kapalua Bay Hotel is having its problems, having opened just when tourism started its slide more than a year ago. The occupancy rate is not expected to be any better than last year, which was a disappointment. The hotel is now managed by the Regent International Group, which recently also assumed management of the 100 or so condominium units in the rental pool. Eventually, Kapalua Land Co. plans to add more rooms to the hotel, which has less than 200 rooms.

In addition to an increased marketing budget, the hotel has decided to get incentive groups to use it as a meeting site, and construction has started on a meeting facility, which will be a separate structure but connected to the hotel lobby. It will be able to accommodate 250 to 300 for meetings in addition to present meeting rooms that seat from 60 to 100 persons. The company is also developing 13 fee-simple, single-family lots on the ocean between the Bay Villas and the Ironwoods subdivisions. They will be a minimum half acre each, and will carry premium prices.

RENEWABLE ENERGY

The goal of making the island of Molokai electric-energy self-sufficient in three years was a major victim of the Reagan Administration's federal budget trimming. The Hawaii State/Maui County private consortium group embarked on this program last year, and federal funds from the Department of Energy were to be an important source of financing the biomass, solar, hydroelectric, and wind energy projects. With the drying up of federal funds, the solar project is in limbo, and the biomass and wind energy projects will be financed privately. The hydroelectric project was found to be economically unfeasible at this time.

But Molokai Electric Co. needed new generating capacity anyway to meet growing demand and to replace its aging diesel generators at the Kaunakakai plant, which depend entirely on oil. Unlike other utilities, it has no power supplied by sugar plantations or from hydroelectric sources. Feeling that the price of oil will continue to rise indefinitely into the future, Molokai Electric decided to go with a flexible fuel generator. It purchased 50 acres of land from Molokai Ranch Co. at an extremely low cost, three miles west of Kaunakakai. A three-megawatt generating unit, capable of burning biomass, coal, or oil, has gone up at the new site and there is space for more units to be built later. A gas turbine generator of two-and-a-half-megawatt capacity has also been built there. A gas turbine generator is less efficient than a conventional diesel generator, but since it will employ co-generation (using heat from its exhaust) it will be more efficient. In addition, the utility will move five of its most efficient diesel generators with a total six-megawatt capacity from the old plant to the new site as backup for the system.

Molokai Ranch Co. will supply the utility annually with 17,000 tons of hay with a maximum moisture content of 25 percent, which will be the major biomass fuel. The ranch is also chipping kiawe trees on its vast property, and will store up to 6,000 tons of chips in the plant yard. Eventually, the ranch would rather supply wood chips than hay because the latter can be used for cattle feed within the state. It is now shipping a thousand tons of hay every month, mainly to Oahu dairies and a feedlot. By ratooning the kiawe trees, the ranch can have a constant supply of chips for the biomass plant. The utility is also paying residents for old newspapers, tree trimmings, and other combustible material, and has urged homesteaders to bring

their grass and other biomass combustibles to the plant. Since the boiler for the biomass plant can burn coal, Molokai Electric has an agreement with Kaiser Cement Co. to supply coal in an emergency. It can also convert to oil when needed.

Molokai Electric is the general contractor and is doing the construction without any subcontractors. However, it hired Bechtel Co. engineers from California to train the all-Molokai construction crew and craftsmen, and oversee the work.

Financing was a major problem, and Molokai Electric overcame that in a novel way. It got Aetna Life and Casualty to finance the generating plant and lease it back to the utility. When Molokai Electric signed the 15-year lease with Aetna Life in August 1980, the prime rate was 11 percent. With this low rate and tax credits available to Aetna, the utility's annual lease payments will be a favorable 10 percent of the \$6.7 million cost of the new plant. Molokai Electric Co. assets were valued at only \$2 million prior to the plant expansion.

The utility signed a 15-year hay purchase contract with Molokai Ranch tied not to the price of oil but to the Consumer Price Index. It is betting that the price of oil will rise faster than the CPI, but if the opposite occurs, it has the option of using oil and saving money. Its oil costs are heavy because as a small consumer, it cannot get a supply contract and must buy oil on the open market. So by shifting to biomass and reducing its use of oil, it will save \$700,000 annually in fuel costs in the first year, and more as the price of oil goes up. At present, fuel oil expenses make up 55 percent of its total operating cost, labor and materials make up 30 percent, and 15 percent goes for payment of loans and miscellaneous costs. When the new plant goes into operation, the ratios will be 20 percent for fuel oil, 13 percent for hay and other biomass fuel, 35 percent for labor and materials, and 32 percent for payment of loans and miscellaneous costs. The total operating cost will be higher for the new plant due to the lease rent for the new plant, but payments will not increase for 15 years and there is a chance that they may be reduced due to the new tax act.

The gas turbine generator has just gone on line, and the biomass generating plant is expected to go on stream next April or May.

On the northwest tip of Molokai, the Molokai Energy Co. has installed two windmills on Molokai Ranch land. Four more are scheduled to be built by the end of 1982. The power being generated is fed into the Molokai Electric grid. Later on, the ranch plans to trade off this power with Molokai Electric and use power in off-peak hours to pump water to the Maunaloa plateau to irrigate its grass fields and increase yield of hay.

On Maui, HC&S Co. is in the process of installing a 15-megawatt turbo generator at its Puunene factory which will increase the generating capacity at that factory to 35 megawatts. An old four-megawatt unit will be retired but that will leave two 10-megawatt generators. The new unit is scheduled to go into operation toward midyear 1982. This new unit plus improvements at HC&S's Paia factory will make it possible to export more power to Maui Electric Co. Beginning next year, HC&S will start providing firm power to the utility during the sugarcane grinding season, and unscheduled power during the off-season. With a capacity of 10 megawatts at the Paia factory and an additional 5.5 megawatts from its hydroelectric units, HC&S will have a total of 50.5-megawatt generating capacity. Although 12 megawatts of capacity will be earmarked to supply firm power to the utility by 1983, the actual amount of power delivered annually will fluctuate with the weather. During dry years like this year, HC&S will need more power for pumping irrigation water. During wet years, it should be able to deliver more than 50 million kilowatt hours of power during the year.

With increased power to be supplied by HC&S, Maui Electric will be able to defer plans for building another oil-fired unit in 1984 for four years. Maui Electric is also hoping to get some power from windmills, but the negotiations with Windfarms are

not yet complete. The utility looks for this project to get going in the next few years, and expects to get a maximum 8 percent of its power from this source. Maui Electric is also planning to experiment with co-generation at its Maalaea plant to determine whether or not it is feasible to use the waste heat from the diesel generators to run a steam generator.

The feasibility study for a solar energy plant at Pioneer Mill Co. in Lahaina has been completed for the Department of Energy by Amfac and Bechtel National Inc. The power would be fed to the Pioneer Mill sugar factory, and would save 28,000 barrels of oil a year, or more than \$800,000 annually. The savings, however, would not be sufficient to pay for construction of the \$37-million project. The Amfac team is one of five selected as finalists for the next part of this DOE project, the advanced design stage, which will require government assistance.

AGRICULTURE

Receipts for agricultural crops and livestock at the farm level reached a record \$159.3 million for Maui County in 1980. This was 50 percent more than the \$106.5 million in 1979 receipts, topping the previous record of \$149.6 million in 1974 when sugar brought record returns. Helping set the new record were harvested sugarcane valued at \$100.8 million, a new record for harvested pineapple at \$36.4 million, and record receipts for diversified crops at \$12 million. Only the value of livestock sales decreased in 1980 due to a decline in beef production.

Cattle growers in Maui County are in the initial stages of rebuilding their herds as are the other major ranchers in the state. Heifers were retained as replacement stock last year, and beef production statewide reached a three-year low. For Maui, beef production in 1980 was the lowest in 15 years, but on Molokai it was a six-year low. And for the first eight months of 1981 Maui County beef production was 5.6 percent below 1980 volume.

Maui ranchers sold 10,600 head of cattle for beef last year which amounted to 9.5 million pounds, a decline of 17.7 percent from the 11.6 million pounds sold in 1979. The value of sales was \$5 million, down 15.7 percent from 1979. Molokai ranchers sold 1,300 head of cattle in 1980, totaling 1.1 million pounds. This was 52.7 percent below 1979 sales of 2.4 million pounds, and revenues of \$547,000 were less than half of the \$1.2 million in 1979 receipts. The reduction was mostly in grain-fed cattle. Maui sold 2,000 fewer animals from the feedlot than in 1979, and Molokai was down by 1,000. But Maui increased the number of grass-fed cattle with total live weight of 4.4 million pounds, up 6.3 percent from 1979. Molokai marketings of grass-fed cattle totaled 711,000 pounds, down 21 percent from the previous year.

Ulupalakua Ranch started raising sheep on its range a couple of years ago, and it sees a promising market in Hawaii. It had a flock of 150 last year, but the number is up to 400 this year. It is crossing sheep from Niihau with rams from California to increase the flock. The animals are being slaughtered and marketed on Maui only until production increases further.

Production of flowers and nursery products increased substantially in Maui County last year, with wholesale value of sales amounting to \$4.3 million, up 50 percent from \$2.9 million in 1979. Sales of carnations as cut flowers doubled last year to \$102,000, while the 35.7 million carnations sold for leis brought \$1.1 million, about the same as in 1979. Protea sales totaled \$279,000, up 5.7 percent from last year. The all other flowers and nursery products category doubled in value of wholesale sales from \$1.4 million in 1979 to \$2.8 million in 1980. Accounting for the large gain was increased production of landscaping material, potted foliage, potted flowers, and orchids. Hawaiian Foliage and Landscaping Inc., Maui's largest nursery, is having a big year in landscaping contracts. Revenues for the

year are expected to be close to \$3 million compared with \$1.7 million last year. It is landscaping the grounds of the new Marriott Hotel and the Kaanapali Alii in Kaanapali, and numerous other condominium projects in West Maui and Kihei. It also has major contracts with hotels in the South Kohala resort area. The large volume of work is expected to continue through 1982.

The County has started work on a 450-acre agricultural park in Omaopio, which is a culmination of plans initiated in the previous administration. Fong Construction Co. got the contract with a low bid of \$2.7 million and is beginning to lay water lines. The park will take a year to complete when the 31 lots will be turned over to the successful applicants. The County got 326 acres from Maui Land & Pineapple Co. in exchange for seven acres of roadway in Kapalua, and purchased 125 acres from Haleakala Ranch for \$1.1 million. The State Departments of Land and Natural Resources and Planning and Economic Development will contribute \$1.2 million toward the construction cost, the federal Economic Development Administration will contribute \$883,000, the County will put up \$750,000, and Maui Land & Pineapple will provide \$180,000 in exchange for a County commitment to sell it 750,000 gallons of water a day.

The County is negotiating with Alexander & Baldwin for land at Kealia Pond where it will build 50 acres of ponds for a baitfish program. It has some research ponds at Kealia now where it is raising Mexican topminnow as a substitute for nehu, the traditional island baitfish. The lease on these small ponds will expire soon. It has \$617,000 in federal funds to build the new ponds, and it is planning to turn the operation over to private enterprise. The federal Fish and Wildlife Service was going to acquire all of Kealia Pond to create a wildlife refuge, but it lost funds in the federal budget slash and its plans are in limbo, so the County will be able to lease some marshland.

Fish Farms Hawaii is also negotiating with A&B for an additional 75 acres of Kealia Pond lands for its fresh fish production project. It has 17 acres of ponds at present but needs the additional acreage to get into mass production of white amur, which will be processed into fishburger as a low-priced protein source. The deboning machinery acquired by Fish Farms can recover 51 percent of the fish in burger form, not fishcake. Working with the University of Hawaii Extension Service, Fish Farms has been testing the fishburger on Maui with the Maui Economic Opportunity office, various institutions, and senior citizen groups. It can be cooked like a hamburger patty or in casseroles, and has had good acceptance among the test groups. Small-sized aku which are not suitable for canning may be used for fishburger also. The white amur doesn't require commercial feed because it thrives on grass in the ponds, and production is estimated at 20,000 pounds per acre per year, with a suggested retail price of \$1.55 a pound for the fishburger. Fish Farms will do a lot of research next year, and production of the white amur will begin in the third quarter.

Orchards Hawaii Ltd. has obtained 30 acres in Pauwela where it hopes to get farmers to raise guava and passion fruit for its processing plant. It depends on more than 100 families to supply fruit for its plant, but the new farm will help to keep the supply steady. The company is working on a mixed juice drink combining mango, pineapple, papaya, and guava, which it will market on the Mainland next year. It supplies some puree to Haleakala Dairy, whose fruit juice sales have increased 20 percent so far this year. Its best seller is POG, a combination of passion fruit, orange, and guava.

Maui Distillers began production of alcohol from sugar molasses at its Puunene plant in August. It has 11 employees. Production is at 100,000 proof gallons per month. Part of the production is shipped to its Honolulu subsidiary, Hawaiian Distillers, for the manufacture of rum and cordials, and part is shipped in bulk to the Mainland for similar processing and marketing.

Sugar

The sugar plantations on Maui produced 266,000 tons of sugar in 1980, the best crop since 1973. This was far above crop projections at midyear. Heavy winter storms had delayed the start of harvesting last year, and there was the strong probability that harvesting could not be completed, leaving some fields to be harvested with the 1981 crop. This is basically what happened on the other three sugar-producing islands, but Maui was aided by good harvesting weather in the second half of the year so that most of the crop was brought in. This was fortunate for Maui plantations because sugar prices in 1980 were much higher than in 1981.

The 1980 sugar production was 5 percent better than in 1979, and 11 percent more molasses was produced in 1980. The value of sugar produced amounted to \$147.4 million, up from \$76.8 million in 1979, and molasses returned \$8 million compared with \$5.9 million in 1979. The total value of sugar and molasses was \$155.4 million, 88 percent better than the \$82.7 million in 1979 receipts.

While the dry conditions in the latter part of 1980 were good for juice quality and harvesting, they have persisted and grown to drought proportions this year. The result has been insufficient water for irrigation, which will affect yields in the 1982 and 1983 crops.

HC&S Co., in particular, has felt the dry conditions this year. The volume of water flow from the East Maui Irrigation Co. ditch during June and July was the lowest in 56 years, and the flow last December was almost as bad. The months in between and since the summer lows have not been much better, and 1981 will go down as one of the drier years on record as far as HC&S is concerned. The forecast for the 1981 crop is under 190,000 tons of sugar, approximately the same as in 1980 when 187,000 tons were produced. The average yield of drip fields harvested through July was more than 14 tons of sugar per acre, which is good but slightly below the 1980 yield. Yield for furrow-irrigated fields harvested through July was 10.38 tons of sugar per acre. The big yield gap between drip and furrow fields is accounted for partly by the more mature sugarcane in drip fields which were in better-yielding areas of the plantation. The total drip-irrigated fields will reach 22,000 acres by the end of this year for the 34,000-acre plantation. Conversion of furrow fields to drip will continue. Drip irrigation's advantage shows up particularly in a dry year like 1981. It not only uses much less water but it is applied so efficiently that yield is increased significantly. Without drip irrigation, HC&S production would have been much lower this year.

HC&S is installing a new 15,000-kilowatt turbo generator at its Puunene factory as part of its program to increase generating capacity in order to supply more power to Maui Electric Co. The new unit, to be operational by May 1982, will be fueled by bagasse during the grinding season, and oil in the off-season. When this new unit comes on stream, an old 4-megawatt unit will be retired. Then HC&S will have a generating capacity of 50.5 megawatts, most of it for its own use, mainly for pumping water for irrigation. The Puunene factory will have a generating capacity of 35 megawatts, the Paia factory, 10 megawatts, and the hydroelectric plant, 5.5 megawatt.

Wailuku Sugar also was adversely affected by the drought this year. Consequently, Wailuku had to pump more water for irrigation, a costly operation with the high rates for power. On the plus side was the best cane juice in 15 years, said Don Cataluna, manager. The result was proportionately more sugar and less molasses. This is the third consecutive year that Wailuku's yield will be better than the previous year, an achievement that only one other plantation will be able to match this year. And Cataluna is forecasting another increase next year. The yield has grown steadily from 10.8 tons of sugar per harvested acre in 1978, to 1981's forecasted 12 tons. One of the reasons for the increase is that in converting some of the sugar

lands to macadamia nuts, the lowest-yielding fields have been given over to nuts. Improved cultural practices, organizational changes, and participatory management are also credited for the higher yields.

Wailuku may also be one of the lowest-cost plantations in the state this year. This would be a significant achievement because Wailuku is the smallest plantation with only 4,200 acres in sugarcane. More acreage will be converted to macadamia nuts, but additional plantings will probably be postponed to 1983.

The plantation is computerizing its agricultural operations. When completed, the computer will schedule and audit all agricultural operations, and schedule harvesting geared to the factory milling rate and the sugarcane delivery rate to the HC&S factory.

Smut disease damage is expected to reduce Pioneer Mill Co.'s sugar crop this year by 5,000 tons from the original estimate to around 41,600 tons. Like most other plantations, Pioneer Mill is converting to smut-resistant varieties, and by next year all of its fields will have new varieties, Robert Vorfeld, manager, said. The harvested fields have been averaging 10.1 tons of sugar per acre this year, .68 ton per acre below 1980 yield.

In addition to the disease problem, dry conditions plagued the plantation for most of the year. The ditch flow was normal in the first two months of the year but has been deficient since then and the pumps have been working overtime to keep the fields irrigated.

At the factory end, one section of the mill has been improved so that the sugar extraction rate has been increased slightly and the energy content of the bagasse raised significantly. Pioneer Mill purchased a part of Wailuku Sugar's old mill and fabricated it into a five-roller dewatering mill. This replaced the French press, which is a screw press that squeezes out the water and most of the remaining sugar from the bagasse. Pioneer Mill uses the diffuser system of extracting sugar from the cane, a system that is 94 percent efficient. The five-roller dewatering mill squeezes out another 3 percent of the sugar. In addition, this mill is able to lower the moisture content 2 percent from the 49 percent attained by the French press. During the off-season the mill will be improved further so it can cut the moisture content of the bagasse to 44 or 45 percent which will upgrade its burning quality and increase steam and power output.

Protea

Maui shipped 872,000 stems of proteas during 1980, 95 percent of statewide shipments of this exotic blossom. The wholesale value of Maui shipments totaled \$279,000, 5.7 percent better than 1979 shipments. The primary variety produced is the pink cushion, but other varieties are increasing in importance as market demand for the more exotic protea is developed.

The Hawaii Protea Cooperative represents most of the growers on Maui, and does the marketing, packing, and shipping for them. This year it has 27 grower members, of which 15 are producing. Last year it had 20 members, with 10 farms in production, according to Cindy Lawrence, manager. Its gross sales for the fiscal year ended last June 30 were \$142,000, double the \$70,000 of the previous fiscal year. The cooperative is projecting sales in this fiscal year at \$272,000. The two largest growers, however, are nonmembers, and do their own marketing and shipping.

The cooperative maintains high standards in order to market flowers of the highest quality. About 75 percent of shipments are to the Mainland, with the major markets being Chicago, Atlanta, Dallas, and Detroit. About 15 percent is shipped to Honolulu, 5 percent to Japan, and the remainder to walk-in trade. It has purchased a refrigerated container from Matson Navigation Co. in which the flowers will be stored after harvest to prolong their shelf life.

With production expected to increase in the next few years, promotion will get a big play. The cooperative has set aside \$5,000 to which the State will add \$10,000 for promotion of protea with advertisements in various media including the local travel guides. The manager will be attending the FID (Florists Transworld Delivery) convention in New Orleans next year to get this flower before the florists of the nation.

Viticulture

Tedeschi Vineyard and Winery had its first good production of wine grapes this year. Early projections were for a harvest of 15 tons of Caronian grapes, the variety chosen over hundreds of other candidates for planting on the hillside of Ulupalakua. However, the final tally came to 25 tons. The first 21 tons, picked early when the sugar content was somewhat lower, were processed for champagne. The final four tons were picked later when the sugar content was fuller, and these will be made into red table wine which has to be aged two years before bottling. The winery will be able to get 1,500 to 2,000 cases of champagne from the harvest.

Juice quality of the grapes was very good for both last year's and this year's harvests. Yield this year was better than two tons of grapes per acre but it has to be between four and five tons for the operation to be economically viable. The vines are only four years old, and yield will increase with age. The vineyard has 12 acres of grapes with eight of them bearing. The plan is to put in another eight acres, probably in two years.

The first bottles of champagne which were put up last year may be ready in another year, but the red wine will not be ready

for the market for another four years. The quality of the products will determine whether Maui will eventually have a grape winery.

Until the grape wine is established, the main product will be Maui Blanc, a pineapple wine that has grown in appeal. Last year 5,000 cases were produced, and with demand increasing, the winery will put up between 8,000 and 9,000 cases this year. For the first time the winery is eyeing the Mainland market, and market tests are being conducted in California.

Pineapple

Pineapple production was down slightly last year in Maui County. The total harvest on Maui, Molokai, and Lanai was 479,000 tons, about 73 percent of the state crop. The value of the fruit at the farm level was reported by the State Department of Agriculture to be \$76.6 million for the state crop, and \$36.4 million for the Maui County crop, which is a record due to higher prices. However, because Maui County produces 73 percent of the crop, the farm value attributed to it should be more like \$55.8 million, with the remaining \$20.8 million credited to Oahu, the only other county growing pineapple.

Although the producers are still having a profitable year, they are running into heavier competition and profits are not as good as in the past several years. World production has increased, and Hawaii is feeling the pressure from increasing Thailand production. A chaotic canned fruit market in California is also making it difficult for pineapple to compete effectively.

Maui County Statistics

	unit	period	1976	1977	1978	1979	1980	9 mo.* 1981	% change 9 mo.* 1981/1980
Population, Resident	number	July 1	60,200p	63,000p	66,000p	68,900p	71,600e	74,100e	3.5
Per Capita Personal Income	dollars	total	6,436	7,098	7,612	8,299	n.a.	n.a.	—
Civilian Labor Force	number	mo. avg.	29,400	31,000	31,750	32,400	33,650	33,850p	0.1
Employment	number	mo. avg.	26,300	28,700	29,350	30,350	31,750	31,750p	-0.6
Unemployment	number	mo. avg.	3,100	2,300	2,400	2,050	1,900	2,050p	10.8
Unemployment Rate	percent	mo. avg.	10.6	7.4	7.5	6.3	5.6	6.1p	10.9
Total Job Count†	number	mo. avg.	26,600	28,450	30,950	32,650	34,400	33,800p	-2.2
State Tax Collections	thous. \$	total	43,049	47,031	54,405	64,905	71,261	44,076**	5.8**
Total Bank Deposits	thous. \$	end per	171,409	197,315	238,641	263,974	277,001	275,271	0.9
Debits to Demand Deposits	mil. \$	total	1,426	1,736	2,246	2,787	3,077	2,241	-0.6
Private Permits	thous. \$	total	74,736	74,768	168,923	146,443	253,690	118,878	-34.1
Residential	thous. \$	total	37,086	58,298	104,094	107,857	215,209	98,522	-32.9
Single Family	no. of units	total	873	1,081	994	1,010	803	299	-47.7
Multi-Family	no. of units	total	229	497	1,330	1,098	1,815	1,007	-22.3
Non-Residential	thous. \$	total	37,710	16,469	64,829	38,587	38,480	20,356	-39.1
Public Contracts Awarded	thous. \$	total	35,296	26,863	43,564	36,777	17,886	7,347	-48.5
Federal	thous. \$	total	4,599	10,833	2,134	1,572	3,400	159	-95.3
State	thous. \$	total	13,807	7,239	25,242	28,420	13,181	5,823	-39.6
County	thous. \$	total	16,890	8,792	16,187	6,785	1,305	1,365	10.6
Estimated Westbound Visitors	thous.	total	1,111	1,257	1,403	1,420	1,378	1,025p	-3.2
Intended Length of Stay—Westbound	no. of days	mo. avg.	3.50	3.62	3.77	4.03	4.08	4.15p	1.7
Hotel Inventory	number	June	7,378	8,397	8,680	9,654	10,483	11,245	7.3
Hotel Occupancy	percent	mo. avg.	74.8	76.9	80.4	73.0	66.2	61.8	-9.9
Electricity Generated	mil. KWH	total	368	411	445	476	504	403	8.1
Telephones in Service	number	end per	41,196	46,417	51,316	55,497	60,626	62,661	5.5
Motor Vehicle Registration	number	total	46,617	59,778	56,615	60,911	62,604	n.a.	—
Pineapple Production, fresh equivalent	thous. tons	total	457	454	488	491	479	n.a.	—
Sugar Production, raw sugar 96†	thous. tons	total	253	265	245	253	266	220	5.6
Diversified Agriculture	thous. \$	total	16,194	17,522	19,527	21,334	22,089	n.a.	—
Crops	thous. \$	total	7,765	8,965	10,360	9,788	12,016	n.a.	—
Livestock	thous. \$	total	8,429	8,557	9,167	11,546	10,073	n.a.	—

p = preliminary

n.a. = not available

e = estimated

*except population (July 1), private permit data (8 mo.), and hotel inventory (June)

**Excludes property taxes which were formerly collected by the State but are now collected by the County

†Refers to number of jobs rather than number of persons employed. Persons with more than one job are counted more than once.